APPROVED
By CHernandez at 7:52 am, Aug 21, 2018

SITE INFORMATION

Report Type: Work Plan 1RP-4793

General Site Information:						
Site:	MC Federal #003					
Company:	COG Operating LLC					
Section, Township and Range	Unit F	Sec. 21	T 17S	R 32E		
Lease Number:	API No. 30-025-34773					
County:	Lea County					
GPS:	32.8214073° N			103.7725525° W		
Surface Owner:	Federal					
Mineral Owner:	Federal					
Directions:	From the intersection of Hwy 529 and CR 126, head North on CR126 approx. 1.89mi, turn West and go approx. 0.37mi, turn North and go approx. .35mi, Head West and go approx. .20mi and location is on South side.					

NMOCD approves of the delineation completed and proposed remediation for 1RP-4793 with the following conditions: Both bottom and sidewall confirmation samples are required for each of the proposed depths of excavation. At least one confirmation sidewall/edge sample location must be at the border between each different depth of excavation, for example at the border between AH-1 and AH-2 excavation areas. Marked confirmation sample locations in relation to delineation sample locations on a scaled map. Dated photo documentation of the remediation process.

Release Data:	
Date Released:	8/14/2017
Type Release:	Oil
Source of Contamination:	Hammer Union
Fluid Released:	15 bbls
Fluids Recovered:	10bbls

Official Communication:			
Name:	Robert Mcneil		Ike Tavarez
Company:	COG Operating, LLC		Tetra Tech
Address:	One Concho Center		4000 N. Big Spring
	600 W. Illinois Ave		Ste 401
City:	Midland Texas, 79701		Midland, Texas
Phone number:	(432) 686-3026		(432) 687-8110
Fax:	(432) 684-7137		
Email:	rmcneil@conchoresources.com		Ike.Tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	**Ranking Score**	**Site Data**
<50 ft	20	
50-99 ft	10	<100
>100 ft.	**0**	
WellHead Protection:	**Ranking Score**	**Site Data**
Water Source <1,000 ft., Private <200 ft.	20	
Water Source >1,000 ft., Private >200 ft.	**0**	0
Surface Body of Water:	**Ranking Score**	**Site Data**
<200 ft.	20	
200 ft - 1,000 ft.	10	
>1,000 ft.	**0**	0
Total Ranking Score:	**10**	

Acceptable Soil RRAL (mg/kg)		
Benzene	**Total BTEX**	**TPH**
10	50	1,000

TETRA TECH

June 15, 2018

Ms. Olivia Yu
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Work Plan for the COG Operating LLC, MC Federal #3 Tank Battery, Unit F, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico. 1RP-4793.

Mr. Yu:

Tetra Tech, Inc. (Tetra Tech) was contacted by COG Operating LLC., (COG) to assess and evaluate a release that occurred at MC Federal #3 Tank Battery, Unit F, Section 21, Township 17 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.8214073º, W 103.7725525º. The site location is shown on Figures 1 and 2.

Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on August 14, 2017, and released approximately fifteen (15) barrels of oil due to a hammer union failure on a divert line. A vacuum truck was used to remove all freestanding fluids, recovering approximately teen (10) barrels of oil. The release was contained inside the bermed facility and impacted an area measuring approximately 125' x 35'. The initial C-141 Form is included in Appendix A.

Groundwater

No water wells are listed in Section 17 in the New Mexico Office of the State Engineers database or on the USGS National Water Information System. According to the Chevron Texaco Groundwater Trend map, the average depth to groundwater in the area is between 150' and 175' below surface. However, the wells in the vicinity are less than 100' below surface and greater than 50' below surface. The groundwater data is shown in Appendix B.

Tetra Tech
4000 North Big Spring, Suite 401, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Soil Assessment and Analytical Results

On March 6, 2018, and April 12, 2018, Tetra Tech personnel were on site to evaluate and sample the release area. Three (3) hand augers were installed in the release area to a total depth of 5.5' below surface. Selected samples were analyzed for TPH analysis by EPA method 8015 modified, and BTEX by EPA Method 8021B. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, none of the samples analyzed showed benzene or total BTEX concentrations above the laboratory reporting limits. Additionally, the areas of auger holes (AH-1, AH-2, and AH-3) showed TPH levels above the RRALs with concentrations of 5,170 mg/kg 6,072 mg/kg and 5,580 mg/kg at 0-1' below surface. The area of auger hole (AH-1) declined with depth at 1-1.5' below surface, with a TPH concentration of 288 mg/kg. The area of auger hole (AH-2) declined with depth, but a showed a TPH concentration of 2,090 mg/kg at 1-1.5' and 55.7 mg/kg at 2-2.5' mg/kg below surface. In addition, the area of auger hole (AH-3) had TPH concentrations of 7,980 mg/kg and 1,220 mg/kg at 1-1.5' and 2-2.5' below surface. The TPH declined below the RRAL at 3-3.5' below surface, with a concentration of <15.0 mg/kg.

Work Plan

Based on the laboratory results, COG will attempt to remove the TPH impacted soils as shown on Figure 4 and highlighted (green) on Table 1. The areas (AH-1, AH-2, and AH-3) will be hand dug (excavated) to approximately 1.0' to 3.0' below surface. Due to the active equipment and access issues, the impacted areas around the tanks, steel lines and flowlines around the perimeter of the spill will be excavated to maximum extent practicable. If we cannot excavate the impacted soil due safety concerns or access, we will defer the remaining impact until abandonment. All of the excavated material will be transported offsite for proper disposal. Once excavated to the appropriate depth, the excavated areas will be backfilled with clean material to surface grade.

TETRA TECH

The proposed excavation depths may not be reached due to wall cave-ins and safety concerns for onsite personnel. Also, impacted soil around oil and gas equipment, structures or lines may not be feasible or practicable to be removed due to safely concerns for onsite personnel. As such, COG will excavate the impacted soils to the maximum extent practicable.

Conclusion

Upon completion, a final report detailing the remediation activities will be submitted to the NMOCD. If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call at (432) 682-4559.

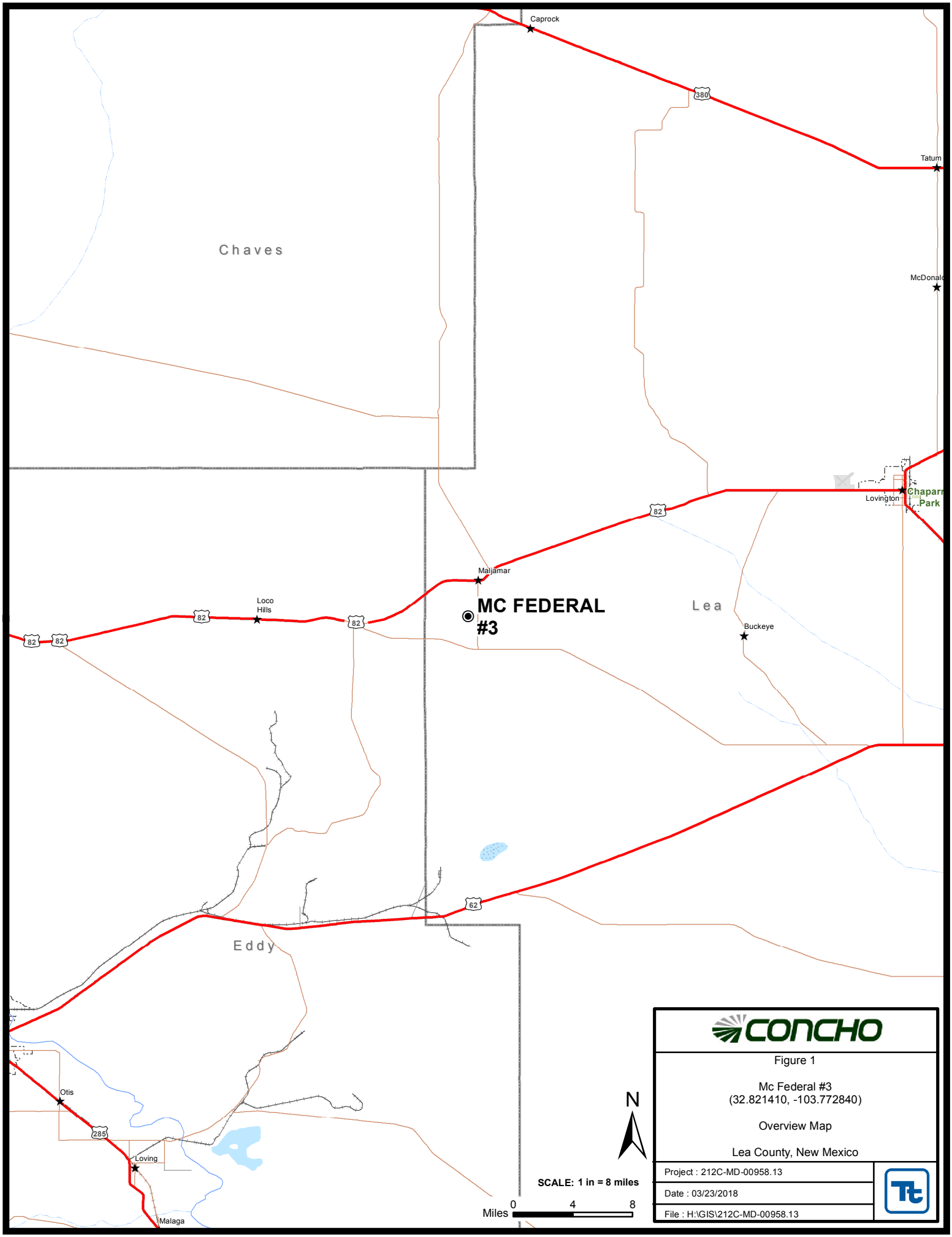
Respectfully submitted,
TETRA TECH

Mike Carmona,
Geologist I

Ike Tavarez,
Senior Project Manager, P.G.

cc: Robert McNeill – COG
Dakota Neel – COG
Rebecca Haskell – COG
Crystal Weaver - NMOCD
Shelly Tucker - BLM

Figures



CONCHO

Figure 1

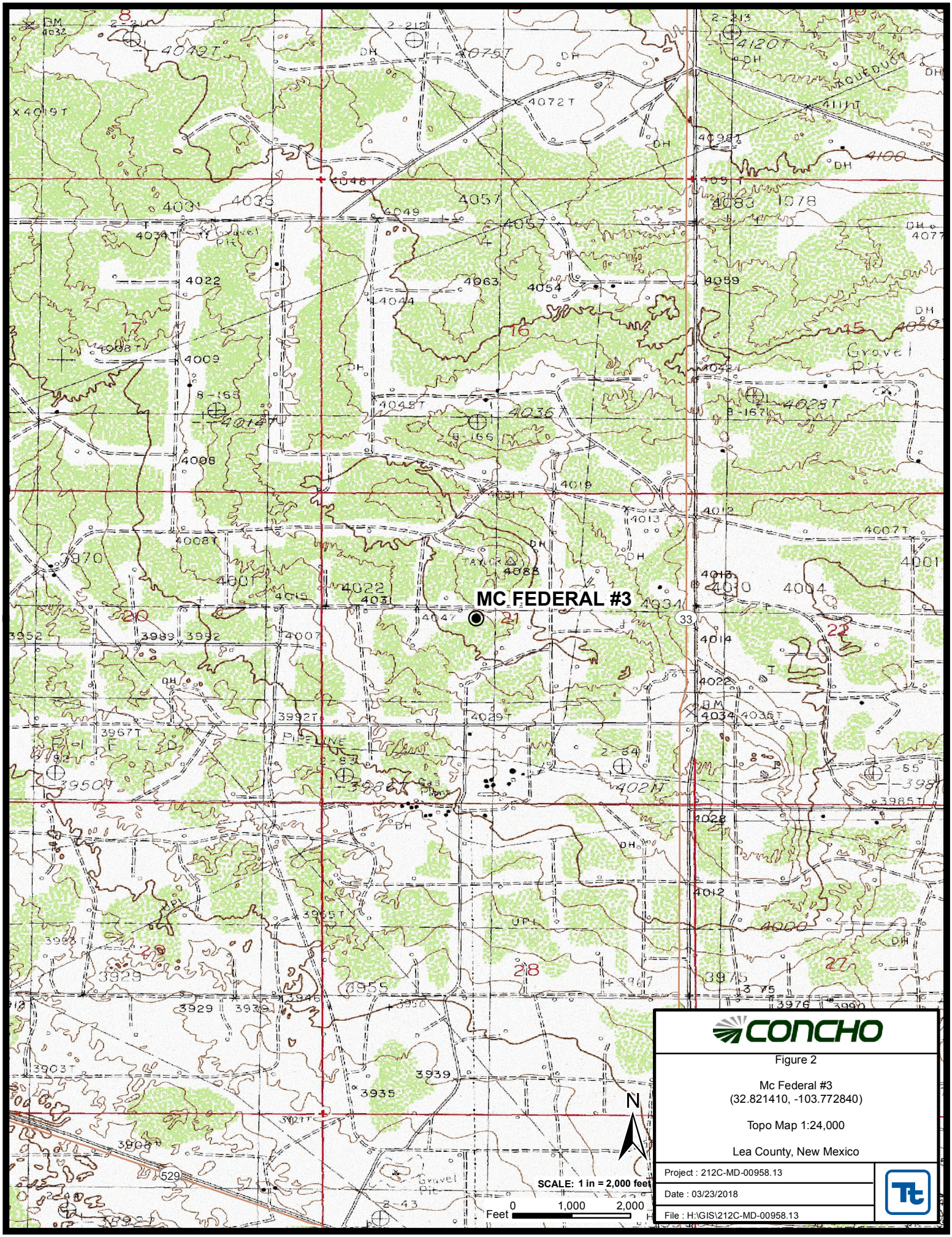
Mc Federal #3
(32.821410, -103.772840)

Overview Map

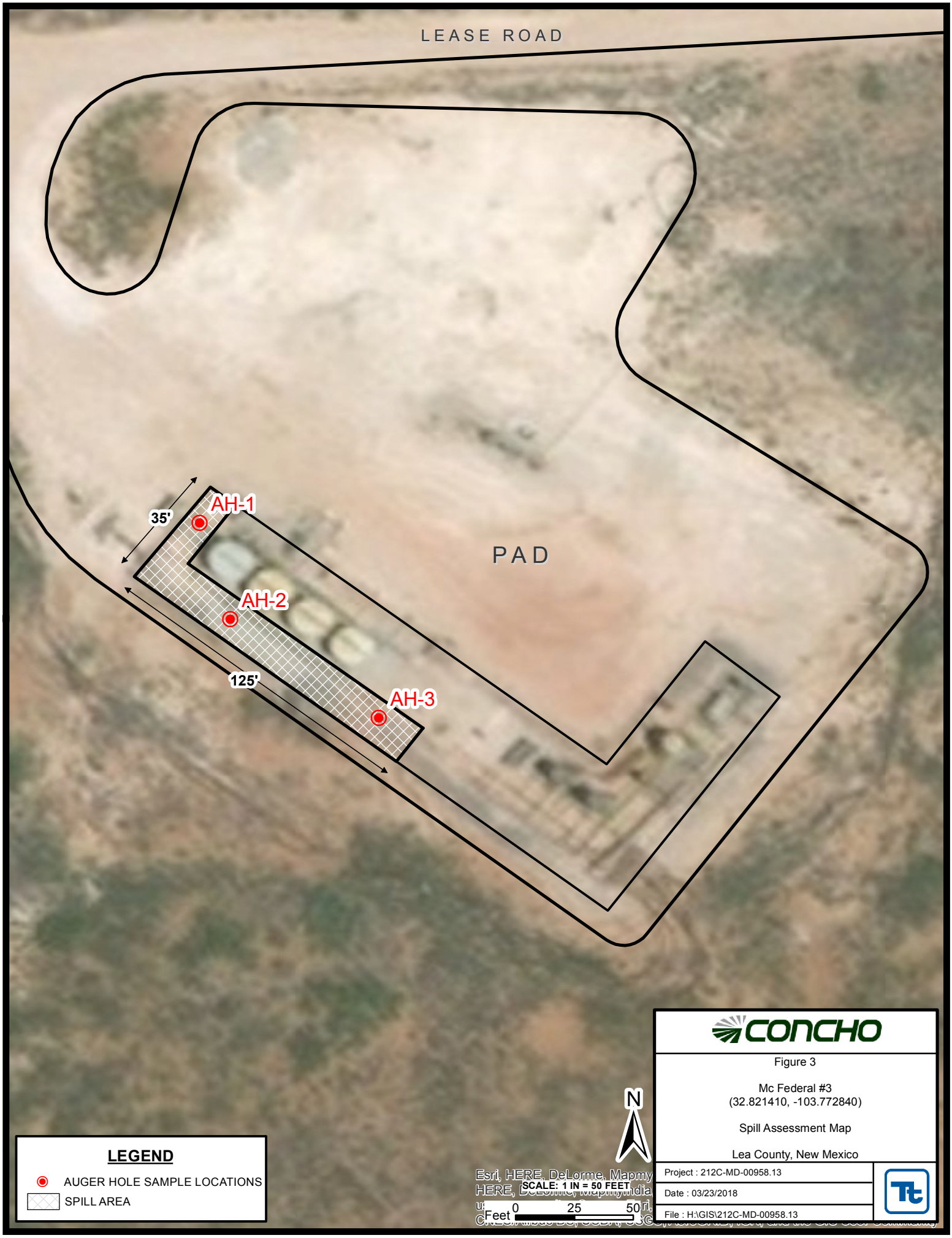
Lea County, New Mexico

Project : 212C-MD-00958.13	
Date : 03/23/2018	
File : H:\GIS\212C-MD-00958.13	

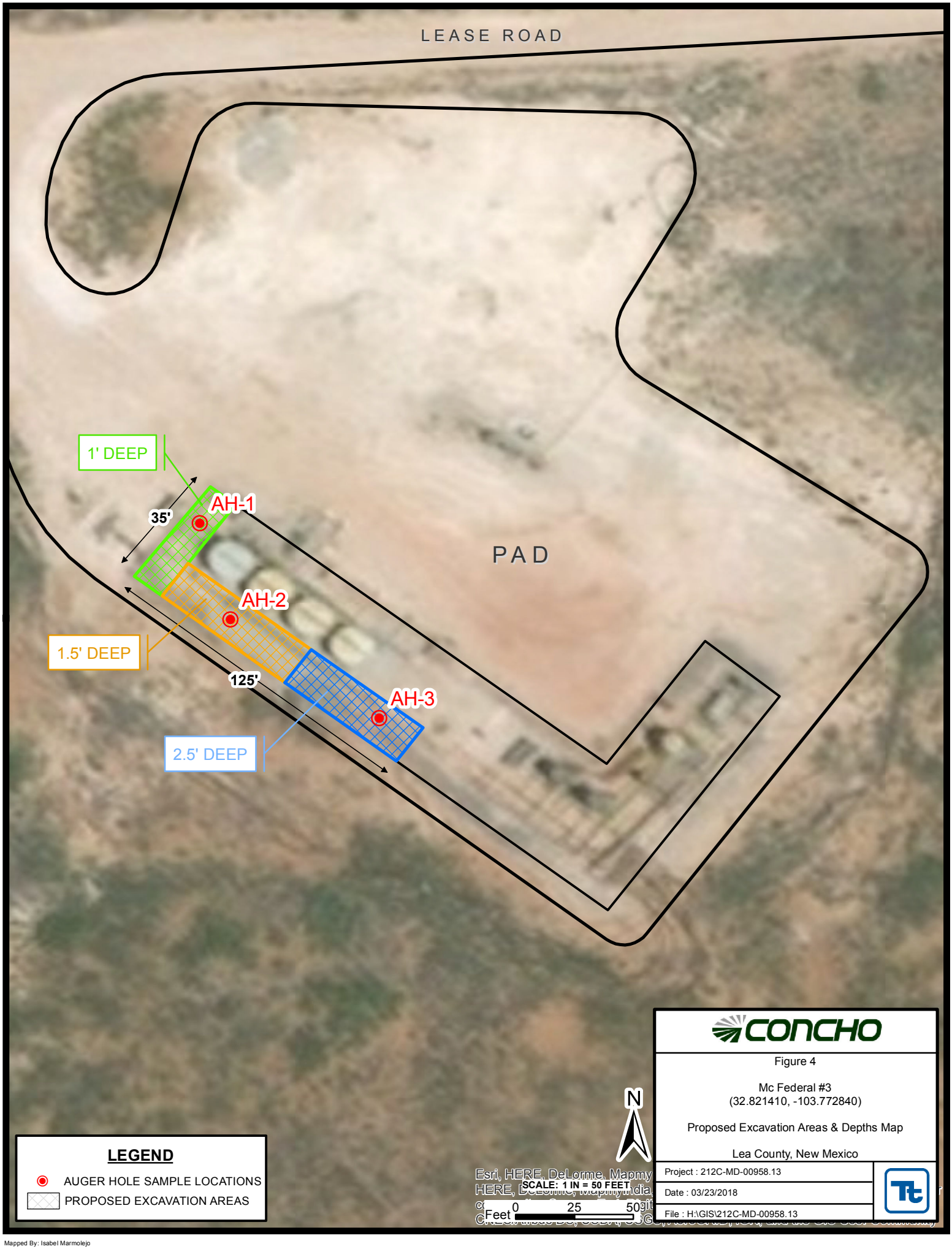
Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo



Mapped By: Isabel Marmolejo



CONCHO

Figure 4

Mc Federal #3
(32.821410, -103.772840)

Proposed Excavation Areas & Depths Map

Lea County, New Mexico

Project : 212C-MD-00958.13	
Date : 03/23/2018	
File : H:\GIS\212C-MD-00958.13	

Mapped By: Isabel Marmolejo

Tables

Table 1
COG Operating LLC.
MC Federal #3
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)
			In-Situ	Removed	C6-C10	C10-C28	C28-C35	Total					
AH-1	3/6/2018	0-1	X	-	1,060	3,610	498	**5,170**	<0.0998	0.116	1.25	5.02	6.39
	"	1-1.5	X	-	37.0	221	29.9	288	<0.00200	<0.00200	<0.00200	0.0404	0.0404
	4/12/2018	0-1	X	-	226	2,590	127	**2,940**	-	-	-	-	-
	"	1-1.5	X	-	<15.0	18.8	<15.0	18.8	-	-	-	-	-
	"	2-2.5	X	-	<15.0	<15.0	<15.0	<15.0	-	-	-	-	-
AH-2	3/6/2018	0-1	X	-	51.3	2,330	537	**2,920**	<0.00202	<0.00202	0.00504	0.0212	0.0263
	"	1-1.5	X	-	26.0	1,670	391	**2,090**	<0.00199	<0.00199	0.00410	0.00443	0.00853
	4/12/2018	0-1	X	-	**471.0**	**6,020**	**225**	**6,720**	-	-	-	-	-
	"	1-1.5	X	-	27.7	213	<14.9	241	-	-	-	-	-
	"	2-2.5	X	-	<15.0	55.7	<15.0	55.7	-	-	-	-	-
AH-3	3/6/2018	0-1	X	-	**183**	**4,570**	**827**	**5,580**	<0.00198	<0.00198	0.00561	0.0104	0.0160
	"	1-1.5	X	-	247	3,340	489	**4,080**	<0.00200	<0.00200	0.0236	0.0300	0.0536
	4/12/2018	0-1	X	-	<15.0	2,020	131	**4,550**	-	-	-	-	-
	"	1-1.5	X	-	**237**	**3,490**	**137**	**7,980**	-	-	-	-	-
	"	2-2.5	X	-	<15.0	531	49.2	**1,220**	-	-	-	-	-
	"	3-3.5	X	-	<15.0	<15.0	<15.0	<15.0	-	-	-	-	-

Proposed Excavation Depths

Photos

COG Operating LLC
MC Federal #3 TB
Lea County, NM

View East of Northeast part of Tank Battery

View South of AH#1

COG Operating LLC
MC Federal #3 TB
Lea County, NM

View North of area, AH#1

View North of area, AH#1

COG Operating LLC
MC Federal #3 TB
Lea County, NM

View East of area, AH#2

View Northwest of area, AH#2

COG Operating LLC
MC Federal #3 TB
Lea County, NM

View South of area, AH#3

View East of area, AH#3.

Appendix A

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: COG Operating LLC OGRID # 229137		Contact:	Robert McNeill
Address: 600 West Illinois Avenue, Midland TX 79701		Telephone No.	432-683-7443
Facility Name: MC Federal #003		Facility Type:	Tank Battery
Surface Owner: Federal	Mineral Owner: Federal		API No. 30-025-34773

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	21	17S	32E	2,160	North	2,310	West	Lea

Latitude 32.8214073 **Longitude** -103.7725525

NATURE OF RELEASE

Type of Release: Oil	Volume of Release: 15 bbl.	Volume Recovered: 10 bbl.
Source of Release: Hammer Union	Date and Hour of Occurrence: August 14, 2017 2:00 pm	Date and Hour of Discovery: August 14, 2017 2:00 pm
Was Immediate Notice Given? ☐ Yes ☒ No ☒ Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED
By Olivia Yu at 6:02 pm, Aug 18, 2017

Describe Cause of Problem and Remedial Action Taken.*

The release was from a hammer union on a divert line. The hammer union was tightened.

Describe Area Affected and Cleanup Action Taken.*

The release was within an unlined berm. A vacuum truck was dispatched to remove all freestanding fluids. Concho will have the spill area sampled to delineate any possible impact from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation activities.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Rebecca Haskell		OIL CONSERVATION DIVISION	
Printed Name:	Rebecca Haskell	Approved by Environmental Specialist:	
Title:	Senior HSE Coordinator	Approval Date: 8/18/2017	Expiration Date:
E-mail Address:	rhaskell@concho.com	Conditions of Approval: see attached directive	Attached ☐
Date: August 17, 2017	Phone: 432-683-7443		

* Attach Additional Sheets If Necessary

1RP-4793

nOY1723065162

pOY1723065337

Appendix B

Water Well Data
Average Depth to Groundwater (ft)
COG - MC Federal #3
Lea County, New Mexico

16 South 31 East

6	5	4	3	2 290	1
7	8	9	10	11	12 288
18	17	16	15	14 113 314	13 299
19	20	21	22	23	24
30	29	28	27	26	25
31 290	32	33	34	35	36

16 South 32 East

6	5	4	3 65	2 265	1 265
7	8	9	10	11	12 215
18	17	16 221	15	14	13 215
19 220	20	21 210	22	23 210	24
30	29	28	27	26 243	25
31	32	33	34	35	36 260

16 South 33 East

6	5 180	4 150	3 130	2 148	1 142
7	8 200	9	10 182	11	12 142
18	17 182	16 180	15 175	14 143	13 110
19	20	21	22	23 120	24
30 191	29	28 190	27 130	26 143	25 120
31 190	32 168	33	34 160	35	36

17 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34 271	35	36

17 South 32 East

6	5	4 82	3 175	2 179 60	1 200
7	8	9	10 132	11 70 88	12 120
18	17	16	15	14	13
19	20	21	22	23	24
30 180 dry	29	28 81	27	26	25
31	32	33	34	35	36

Maljamar

17 South 33 East

6 90	5	4	3 155	2 158	1 150
7 167	8 173	9 161	10	11	12
18 188	17 180	16	15	14	13 165
19	20 190	21	22	23 115	24
30 69	29 60	28	27	26	25
31	32	33 120	34	35 155	36

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15 98	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

18 South 32 East

6	5	4 65	3	2	1
7 460 82	8	9	10	11	12
18	17	16 84	15	14	13
19	20 164	21	22 429	23	24
30	29	28	27	26	25
31	32	33	34 117	35	36

18 South 33 East

6	5	4	3 60	2	1
7	8 100	9	10 62	11 46	12 143 140
18	17 85	16	15	14 36	13 60
19 >140	20	21	22	23	24 195
30 35	29	28	27	26	25
31	32	33 177	34	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Depth Well	Depth Water	Water Column
L 03980		L	LE	2	2	2	01	17S	32E	620466	3637594*	270	200	70
L 03980 S		L	LE	4	4	4	02	17S	32E	618870	3636170*	255	179	76
L 03980 S2		L	LE	3	2	3	01	17S	32E	619470	3636581*	225	175	50
L 04019		L	LE	4	3	4	02	17S	32E	618468	3636166*	182		
L 04020		L	LE	3	3	4	02	17S	32E	618268	3636166*	200		
L 04021	R	L	LE	3	4	4	02	17S	32E	618670	3636170*	190		
L 04021 POD3		L	LE		3	4	03	17S	32E	616761	3636252*	247		
L 04021 S		L	LE	2	4	4	03	17S	32E	617262	3636354*	260		
L 13047 POD1		L	LE				11	17S	32E	618187	3635254*	140		
L 13050 POD1		L	LE	2	2	1	10	17S	32E	616463	3635945*	156	132	24
RA 08855			LE	4	1	1	10	17S	32E	616061	3635742*	158		
RA 09505			LE	2	2	1	10	17S	32E	616462	3635944	147		
RA 09505 S			LE	2	2	1	10	17S	32E	616463	3635945*	144		
RA 10175			LE		2	1	28	17S	32E	614814	3631005*	158		
RA 11684 POD1			LE	1	1	4	11	17S	32E	618216	3635124	275		
RA 11684 POD2			LE	1	1	4	11	17S	32E	618313	3635248	275		
RA 11684 POD3			LE	3	3	1	11	17S	32E	618262	3635371	275		
RA 11684 POD4			LE	1	3	2	11	17S	32E	618334	3635521	275		
RA 11684 POD5			LE	3	1	4	11	17S	32E	618353	3635047	275		
RA 11734 POD1			LE	2	2	1	10	17S	32E	616556	3635929	165		
RA 11911 POD1			LE	1	3	1	24	17S	32E	619192	3632296	35		
RA 12020 POD1			LE	2	2	1	28	17S	32E	614828	3630954	120	81	39
RA 12042 POD1			LE	2	2	1	28	17S	32E	614891	3631181	400		

Average Depth to Water: **153 feet**

Minimum Depth: **81 feet**

Maximum Depth: **200 feet**

Record Count: 23

PLSS Search:

Township: 17S **Range:** 32E

***UTM location was derived from PLSS - see Help**

Appendix C

Analytical Report 578429

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

MC Federal #3

212C-MD-00958 Task #13

13-MAR-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-18-24), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-18-14)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)

13-MAR-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **578429**
MC Federal #3
Project Address: Lea County, New Mexico

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 578429. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 578429 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 578429

Tetra Tech- Midland, Midland, TX

MC Federal #3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH #1	S	03-06-18 00:00	0 - 1 ft	578429-001
AH #1	S	03-06-18 00:00	1 - 1.5 ft	578429-002
AH #2	S	03-06-18 00:00	0 - 1 ft	578429-007
AH #2	S	03-06-18 00:00	1 - 1.5 ft	578429-008
AH #3	S	03-06-18 00:00	0 - 1 ft	578429-013
AH #3	S	03-06-18 00:00	1 - 1.5 ft	578429-014
AH #1	S	03-06-18 00:00	2 - 2.5 ft	Not Analyzed
AH #1	S	03-06-18 00:00	3 - 3.5 ft	Not Analyzed
AH #1	S	03-06-18 00:00	4 - 4.5 ft	Not Analyzed
AH #1	S	03-06-18 00:00	5 - 5.5 ft	Not Analyzed
AH #2	S	03-06-18 00:00	2 - 2.5 ft	Not Analyzed
AH #2	S	03-06-18 00:00	3 - 3.5 ft	Not Analyzed
AH #2	S	03-06-18 00:00	4 - 4.5 ft	Not Analyzed
AH #2	S	03-06-18 00:00	5 - 5.5 ft	Not Analyzed
AH #3	S	03-06-18 00:00	2 - 2.5 ft	Not Analyzed
AH #3	S	03-06-18 00:00	3 - 3.5 ft	Not Analyzed
AH #3	S	03-06-18 00:00	4 - 4.5 ft	Not Analyzed
AH #3	S	03-06-18 00:00	5 - 5.5 ft	Not Analyzed

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3043356 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Dilutions due to poor resolution of internal standard created by matrix interference of sample analyzed at 1x.

Certificate of Analysis Summary 578429

Tetra Tech- Midland, Midland, TX

Project Name: MC Federal #3

Project Id: 212C-MD-00958 Task #13
Contact: Ike Tavarez
Project Location: Lea County, New Mexico

Date Received in Lab: Wed Mar-07-18 11:17 am
Report Date: 13-MAR-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	578429-001		578429-002		578429-007		578429-008		578429-013		578429-014	
	Field Id:	AH #1		AH #1		AH #2		AH #2		AH #3		AH #3	
	Depth:	0-1 ft		1-1.5 ft		0-1 ft		1-1.5 ft		0-1 ft		1-1.5 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Mar-06-18 00:00		Mar-06-18 00:00		Mar-06-18 00:00		Mar-06-18 00:00		Mar-06-18 00:00		Mar-06-18 00:00	
BTEX by EPA 8021B	***Extracted:***	Mar-10-18 12:00		Mar-10-18 12:00		Mar-10-18 12:00		Mar-10-18 12:00		Mar-10-18 12:00		Mar-10-18 12:00	
	Analyzed:	Mar-10-18 17:16		Mar-10-18 16:57		Mar-10-18 18:34		Mar-10-18 18:53		Mar-10-18 19:32		Mar-10-18 19:13	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Benzene		<0.0998	0.0998	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00198	0.00198	<0.00200	0.00200
Toluene		0.116	0.0998	<0.00200	0.00200	<0.00202	0.00202	<0.00199	0.00199	<0.00198	0.00198	<0.00200	0.00200
Ethylbenzene		1.25	0.0998	<0.00200	0.00200	0.00504	0.00202	0.00410	0.00199	0.00561	0.00198	0.0236	0.00200
m,p-Xylenes		3.76	0.200	0.0233	0.00401	0.00882	0.00404	0.00443	0.00398	0.0104	0.00396	0.0300	0.00401
o-Xylene		1.26	0.0998	0.0171	0.00200	0.0124	0.00202	<0.00199	0.00199	<0.00198	0.00198	<0.00200	0.00200
Total Xylenes		5.02	0.0998	0.0404	0.00200	0.0212	0.00202	0.00443	0.00199	0.0104	0.00198	0.0300	0.00200
Total BTEX		6.39	0.0998	0.0404	0.00200	0.0263	0.00202	0.00853	0.00199	0.0160	0.00198	0.0536	0.00200
TPH By SW8015 Mod	***Extracted:***	Mar-10-18 10:00		Mar-10-18 10:00		Mar-10-18 10:00		Mar-10-18 10:00		Mar-10-18 10:00		Mar-10-18 10:00	
	Analyzed:	Mar-11-18 06:07		Mar-11-18 06:28		Mar-11-18 09:23		Mar-11-18 09:44		Mar-11-18 07:27		Mar-11-18 07:46	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		1060	74.9	37.0	15.0	51.3	15.0	26.0	15.0	183	74.8	247	74.9
Diesel Range Organics (DRO)		3610	74.9	221	15.0	2330	15.0	1670	15.0	4570	74.8	3340	74.9
Oil Range Hydrocarbons (ORO)		498	74.9	29.9	15.0	537	15.0	391	15.0	827	74.8	489	74.9
Total TPH		5170	74.9	288	15.0	2920	15.0	2090	15.0	5580	74.8	4080	74.9

Kelsey Brooks
Project Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 578429,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3043356 **Sample:** 578429-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 16:57

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0256	0.0300	85	70-130	
4-Bromofluorobenzene	0.0379	0.0300	126	70-130	

Lab Batch #: 3043356 **Sample:** 578429-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 17:16

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0233	0.0300	78	70-130	
4-Bromofluorobenzene	0.0316	0.0300	105	70-130	

Lab Batch #: 3043356 **Sample:** 578429-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 18:34

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0230	0.0300	77	70-130	
4-Bromofluorobenzene	0.0293	0.0300	98	70-130	

Lab Batch #: 3043356 **Sample:** 578429-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 18:53

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0254	0.0300	85	70-130	
4-Bromofluorobenzene	0.0245	0.0300	82	70-130	

Lab Batch #: 3043356 **Sample:** 578429-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 19:13

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0280	0.0300	93	70-130	
4-Bromofluorobenzene	0.0362	0.0300	121	70-130	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 578429,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3043356 **Sample:** 578429-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 19:32

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0277	0.0300	92	70-130	
4-Bromofluorobenzene	0.0370	0.0300	123	70-130	

Lab Batch #: 3043412 **Sample:** 578429-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 06:07

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.9	102	70-135	
o-Terphenyl	49.6	50.0	99	70-135	

Lab Batch #: 3043412 **Sample:** 578429-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 06:28

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.0	99.8	91	70-135	
o-Terphenyl	44.1	49.9	88	70-135	

Lab Batch #: 3043412 **Sample:** 578429-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 07:27

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.6	99.7	91	70-135	
o-Terphenyl	47.6	49.9	95	70-135	

Lab Batch #: 3043412 **Sample:** 578429-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 07:46

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	99.8	102	70-135	
o-Terphenyl	46.8	49.9	94	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 578429,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3043412 **Sample:** 578429-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 09:23

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	97.1	99.9	97	70-135	
o-Terphenyl	44.0	50.0	88	70-135	

Lab Batch #: 3043412 **Sample:** 578429-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 09:44

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	89.7	99.9	90	70-135	
o-Terphenyl	43.4	50.0	87	70-135	

Lab Batch #: 3043356 **Sample:** 7640532-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/10/18 14:03

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0259	0.0300	86	70-130	
4-Bromofluorobenzene	0.0317	0.0300	106	70-130	

Lab Batch #: 3043412 **Sample:** 7640552-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/10/18 23:15

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	82.2	100	82	70-135	
o-Terphenyl	43.8	50.0	88	70-135	

Lab Batch #: 3043356 **Sample:** 7640532-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/10/18 12:07

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0276	0.0300	92	70-130	
4-Bromofluorobenzene	0.0329	0.0300	110	70-130	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 578429,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3043412 **Sample:** 7640552-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/10/18 23:34

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	55.5	50.0	111	70-135	

Lab Batch #: 3043356 **Sample:** 7640532-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/10/18 12:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0257	0.0300	86	70-130	
4-Bromofluorobenzene	0.0340	0.0300	113	70-130	

Lab Batch #: 3043412 **Sample:** 7640552-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 03/10/18 23:54

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.5	100	94	70-135	
o-Terphenyl	43.4	50.0	87	70-135	

Lab Batch #: 3043356 **Sample:** 578592-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 12:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0232	0.0300	77	70-130	
4-Bromofluorobenzene	0.0215	0.0300	72	70-130	

Lab Batch #: 3043412 **Sample:** 578596-005 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 00:33

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.6	99.8	100	70-135	
o-Terphenyl	46.0	49.9	92	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 578429,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3043356 **Sample:** 578592-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/10/18 13:05

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0329	0.0300	110	70-130	
4-Bromofluorobenzene	0.0347	0.0300	116	70-130	

Lab Batch #: 3043412 **Sample:** 578596-005 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 03/11/18 00:52

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	112	100	112	70-135	
o-Terphenyl	49.1	50.0	98	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: MC Federal #3

Work Order #: 578429 **Project ID:** 212C-MD-00958 Task #13

Analyst: ALJ **Date Prepared:** 03/10/2018 **Date Analyzed:** 03/10/2018

Lab Batch ID: 3043356 **Sample:** 7640532-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00200	0.0998	0.0902	90	0.100	0.0860	86	5	70-130	35	
Toluene	<0.00200	0.0998	0.0963	96	0.100	0.0922	92	4	70-130	35	
Ethylbenzene	<0.00200	0.0998	0.110	110	0.100	0.105	105	5	70-130	35	
m,p-Xylenes	<0.00399	0.200	0.217	109	0.200	0.207	104	5	70-130	35	
o-Xylene	<0.00200	0.0998	0.106	106	0.100	0.101	101	5	70-130	35	

Analyst: ARM **Date Prepared:** 03/10/2018 **Date Analyzed:** 03/10/2018

Lab Batch ID: 3043412 **Sample:** 7640552-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1090	109	1000	943	94	14	70-135	35	
Diesel Range Organics (DRO)	<15.0	1000	984	98	1000	832	83	17	70-135	35	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: MC Federal #3

Work Order # : 578429 **Project ID:** 212C-MD-00958 Task #13

Lab Batch ID: 3043356 **QC- Sample ID:** 578592-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/10/2018 **Date Prepared:** 03/10/2018 **Analyst:** ALJ

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00202	0.101	0.0443	44	0.100	0.0412	41	7	70-130	35	X
Toluene	<0.00202	0.101	0.0382	38	0.100	0.0279	28	31	70-130	35	X
Ethylbenzene	<0.00202	0.101	0.0304	30	0.100	0.0219	22	33	70-130	35	X
m,p-Xylenes	<0.00404	0.202	0.0650	32	0.201	0.0364	18	56	70-130	35	XF
o-Xylene	<0.00202	0.101	0.0301	30	0.100	0.0221	22	31	70-130	35	X

Lab Batch ID: 3043412 **QC- Sample ID:** 578596-005 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 03/11/2018 **Date Prepared:** 03/10/2018 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	915	92	1000	967	97	6	70-135	35	
Diesel Range Organics (DRO)	<15.0	998	800	80	1000	839	84	5	70-135	35	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

578429

Client Name: COG	Site Manager: Ike Tavarez
Project Name: MC Federal #3	
Project Location: (county, state) Lea County, New Mexico	Project #: 212C-MD-00958 Task#13
Invoice to: Becky Haskell	
Receiving Laboratory: Xenco Midland Tx	Sampler Signature: Mike Carmona

Comments: Run deeper samples if TPH exceeds 5,000 mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2017 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance				Hold
	AH #1 (0-1')	3/6/2018			X				X			1	N	X		X																		
	AH #1 (1-1.5')	3/6/2018			X				X			1	N	X		X																		
	AH #1 (2-2.5')	3/6/2018			X				X			1	N																					
	AH #1 (3-3.5')	3/6/2018			X				X			1	N																					X
	AH #1 4-4.5')	3/6/2018			X				X			1	N																					X
	AH #1 (5-5.5')	3/6/2018			X				X			1	N																					X
	AH #2 (0-1')	3/6/2018			X				X			1	N	X		X																		X
	AH #2 (1-1.5')	3/6/2018			X				X			1	N	X		X																		
	AH #2 (2-2.5')	3/6/2018			X				X			1	N																					
	AH #2 (3-3.5')	3/6/2018			X				X			1	N																					X

Relinquished by: mike Carmona	Date: 3/7/18	Time: 1100	Received by: [illegible]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Received by: [illegible] Date: 3/7/18 Time: 1100

LAB USE ONLY

Sample Temperature

(Circle) HAND DELIVERE

REMARKS:

- [X] STANDARD
- [ ] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

Temp: 3
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 3

IR ID:R-8

ORIGINAL COPY

Final 1.000

Page 14 of 16

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

578429

Client Name: COG	Site Manager: Ike Tavarez
Project Name: MC Federal #3	
Project Location: (county, state) Lea County, New Mexico	Project #: 212C-MD-00958 Task#13
Invoice to: Becky Haskell	
Receiving Laboratory: Xenco Midland Tx	Sampler Signature: Mike Carmona

Comments: Run deeper samples if TPH exceeds 5,000 mg/kg. Run deeper samples if benzene exceeds 10 mg/kg or Total BTEX exceeds 50 mg/kg

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2017 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance			Hold
	AH #2 (4-4.5')	3/6/2018			X				X			1	N																				X
	AH #2 (5-5.5')	3/6/2018			X				X			1	N																				X
	AH #3 (0-1')	3/6/2018			X				X			1	N	X		X																	X
	AH #3 (1-1.5')	3/6/2018			X				X			1	N	X		X																	X
	AH #3 (2-2.5')	3/6/2018			X				X			1	N																				X
	AH #3 (3-3.5')	3/6/2018			X				X			1	N																				X
	AH #3 (4-4.5')	3/6/2018			X				X			1	N																				X
	AH #3 (5-5.5')	3/6/2018			X				X			1	N																				X

Final 1.000

Relinquished by: Mike Carmona	Date: 3/7/18	Time: 1100	Received by: [signature]
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Received by: Date: 3/7/18 Time: 1100

LAB USE ONLY

Sample Temperature

(Circle)

REMARKS:

- [X] STANDARD
- [ ] RUSH: Same Day 24 hr 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

Temp: .3 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: .1

ORIGINAL COPY

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: Tetra Tech- Midland

Date/ Time Received: 03/07/2018 11:17:27 AM

Work Order #: 578429

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	.1	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	TPH in bulk container
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**No**	
#18 Water VOC samples have zero headspace?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Katie Lowe Date: 03/07/2018

Checklist reviewed by: Kelsey Brooks Date: 03/09/2018

Analytical Report 582192

for

Tetra Tech- Midland

Project Manager: Ike Tavarez

MC Federal #3

212C-MD-00958 Task #13

17-APR-18

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-18-24), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-17-16), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab Code: TX00158): Texas (T104704400-18-14)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab Code: AZ00901): Arizona (AZM757)
Xenco-Atlanta (LELAP Lab ID #04176)
Xenco-Tampa: Florida (E87429)
Xenco-Lakeland: Florida (E84098)

17-APR-18

Project Manager: **Ike Tavarez**
Tetra Tech- Midland
4000 N. Big Spring Suite 401
Midland, TX 79705

Reference: XENCO Report No(s): **582192**
MC Federal #3
Project Address: Lea County, New Mexico

Ike Tavarez:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 582192. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 582192 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Kelsey Brooks
Project Manager

Sample Cross Reference 582192

Tetra Tech- Midland, Midland, TX

MC Federal #3

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
AH #1 (0-1')	S	04-12-18 00:00		582192-001
AH #1 (1-1.5')	S	04-12-18 00:00		582192-002
AH #1 (2-2.5')	S	04-12-18 00:00		582192-003
AH #2 (0-1')	S	04-12-18 00:00		582192-007
AH #2 (1-1.5')	S	04-12-18 00:00		582192-008
AH #2 (2-2.5')	S	04-12-18 00:00		582192-009
AH #3 (0-1')	S	04-12-18 00:00		582192-013
AH #3 (1-1.5')	S	04-12-18 00:00		582192-014
AH #3 (2-2.5')	S	04-12-18 00:00		582192-015
AH #3 (3-3.5')	S	04-12-18 00:00		582192-016
AH #1 (3-3.5')	S	04-12-18 00:00		Not Analyzed
AH #1 (4-4.5')	S	04-12-18 00:00		Not Analyzed
AH #1 (5-5.5')	S	04-12-18 00:00		Not Analyzed
AH #2 (3-3.5')	S	04-12-18 00:00		Not Analyzed
AH #2 (4-4.5')	S	04-12-18 00:00		Not Analyzed
AH #2 (5-5.5')	S	04-12-18 00:00		Not Analyzed
AH #3 (4-4.5')	S	04-12-18 00:00		Not Analyzed
AH #3 (5-5.5')	S	04-12-18 00:00		Not Analyzed

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 582192

Tetra Tech- Midland, Midland, TX

Project Name: MC Federal #3

Project Id: 212C-MD-00958 Task #13
Contact: Ike Tavarez
Project Location: Lea County, New Mexico

Date Received in Lab: Thu Apr-12-18 03:30 pm
Report Date: 17-APR-18
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	582192-001		582192-002		582192-003		582192-007		582192-008		582192-009	
	Field Id:	AH #1 (0-1')		AH #1 (1-1.5')		AH #1 (2-2.5')		AH #2 (0-1')		AH #2 (1-1.5')		AH #2 (2-2.5')	
	Depth:												
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Apr-12-18 00:00		Apr-12-18 00:00		Apr-12-18 00:00		Apr-12-18 00:00		Apr-12-18 00:00		Apr-12-18 00:00	
TPH By SW8015 Mod	***Extracted:***	Apr-14-18 09:00		Apr-14-18 09:00		Apr-14-18 09:00		Apr-14-18 09:00		Apr-14-18 09:00		Apr-14-18 09:00	
	Analyzed:	Apr-14-18 11:49		Apr-14-18 12:15		Apr-14-18 12:42		Apr-14-18 14:02		Apr-14-18 14:28		Apr-14-18 14:54	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Gasoline Range Hydrocarbons (GRO)		226	74.9	<15.0	15.0	<15.0	15.0	471	74.8	27.7	14.9	<15.0	15.0
Diesel Range Organics (DRO)		2590	74.9	18.8	15.0	<15.0	15.0	6020	74.8	213	14.9	55.7	15.0
Oil Range Hydrocarbons (ORO)		127	74.9	<15.0	15.0	<15.0	15.0	225	74.8	<14.9	14.9	<15.0	15.0
Total TPH		2940	74.9	18.8	15.0	<15.0	15.0	6720	74.8	241	14.9	55.7	15.0

Kelsey Brooks
Project Manager

Certificate of Analysis Summary 582192

Tetra Tech- Midland, Midland, TX

Project Name: MC Federal #3

Project Id: 212C-MD-00958 Task #13
Contact: Ike Tavarez
Project Location: Lea County, New Mexico

Date Received in Lab: Thu Apr-12-18 03:30 pm
Report Date: 17-APR-18
Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	582192-013		582192-014		582192-015		582192-016			
	Field Id:	AH #3 (0-1')		AH #3 (1-1.5')		AH #3 (2-2.5')		AH #3 (3-3.5')			
	Depth:										
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	Apr-12-18 00:00		Apr-12-18 00:00		Apr-12-18 00:00		Apr-12-18 00:00			
TPH By SW8015 Mod	***Extracted:***	Apr-14-18 09:00		Apr-14-18 09:00		Apr-14-18 09:00		Apr-16-18 16:00			
	Analyzed:	Apr-15-18 08:47		Apr-14-18 15:47		Apr-15-18 09:12		Apr-17-18 10:41			
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Gasoline Range Hydrocarbons (GRO)		<15.0	15.0	237	74.8	<15.0	15.0	<15.0	15.0		
Diesel Range Organics (DRO)		2020	15.0	3490	74.8	531	15.0	<15.0	15.0		
Oil Range Hydrocarbons (ORO)		131	15.0	137	74.8	49.2	15.0	<15.0	15.0		
Total TPH		4550	15.0	7980	74.8	1220	15.0	<15.0	15.0		

Kelsey Brooks
Project Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 582192,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3046716 **Sample:** 582192-001 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 11:49

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	99.9	108	70-135	
o-Terphenyl	63.6	50.0	127	70-135	

Lab Batch #: 3046716 **Sample:** 582192-002 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 12:15

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	100	99.7	100	70-135	
o-Terphenyl	51.3	49.9	103	70-135	

Lab Batch #: 3046716 **Sample:** 582192-003 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 12:42

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.9	99.9	95	70-135	
o-Terphenyl	48.5	50.0	97	70-135	

Lab Batch #: 3046716 **Sample:** 582192-007 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 14:02

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	118	99.7	118	70-135	
o-Terphenyl	39.2	49.9	79	70-135	

Lab Batch #: 3046716 **Sample:** 582192-008 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 14:28

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	99.4	99.6	100	70-135	
o-Terphenyl	54.4	49.8	109	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 582192,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3046716 **Sample:** 582192-009 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 14:54

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.5	99.9	96	70-135	
o-Terphenyl	49.7	50.0	99	70-135	

Lab Batch #: 3046716 **Sample:** 582192-014 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 15:47

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	99.7	108	70-135	
o-Terphenyl	63.1	49.9	126	70-135	

Lab Batch #: 3046716 **Sample:** 582192-013 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/15/18 08:47

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	103	99.7	103	70-135	
o-Terphenyl	59.4	49.9	119	70-135	

Lab Batch #: 3046716 **Sample:** 582192-015 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/15/18 09:12

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	107	99.8	107	70-135	
o-Terphenyl	53.7	49.9	108	70-135	

Lab Batch #: 3046890 **Sample:** 582192-016 / SMP **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/17/18 10:41

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	93.1	99.7	93	70-135	
o-Terphenyl	46.4	49.9	93	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 582192,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3046716 **Sample:** 7642660-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/14/18 10:32

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	51.8	50.0	104	70-135	

Lab Batch #: 3046890 **Sample:** 7642747-1-BLK / BLK **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/16/18 23:30

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	52.3	50.0	105	70-135	

Lab Batch #: 3046716 **Sample:** 7642660-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/14/18 10:58

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	53.7	50.0	107	70-135	

Lab Batch #: 3046890 **Sample:** 7642747-1-BKS / BKS **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/16/18 23:57

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	100	111	70-135	
o-Terphenyl	55.9	50.0	112	70-135	

Lab Batch #: 3046716 **Sample:** 7642660-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/14/18 11:23

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	54.5	50.0	109	70-135	

* Surrogate outside of Laboratory QC limits
** Surrogates outside limits; data and surrogates confirmed by reanalysis
*** Poor recoveries due to dilution
Surrogate Recovery [D] = 100 * A / B
All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: MC Federal #3

Work Orders : 582192,

Project ID: 212C-MD-00958 Task #13

Lab Batch #: 3046890 **Sample:** 7642747-1-BSD / BSD **Batch:** 1 **Matrix:** Solid

Units: mg/kg **Date Analyzed:** 04/17/18 00:24

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	123	100	123	70-135	
o-Terphenyl	60.1	50.0	120	70-135	

Lab Batch #: 3046716 **Sample:** 582192-003 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 13:09

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	99.8	111	70-135	
o-Terphenyl	52.8	49.9	106	70-135	

Lab Batch #: 3046890 **Sample:** 582461-001 S / MS **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/17/18 01:18

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	111	99.7	111	70-135	
o-Terphenyl	54.1	49.9	108	70-135	

Lab Batch #: 3046716 **Sample:** 582192-003 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/14/18 13:35

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	113	99.8	113	70-135	
o-Terphenyl	54.2	49.9	109	70-135	

Lab Batch #: 3046890 **Sample:** 582461-001 SD / MSD **Batch:** 1 **Matrix:** Soil

Units: mg/kg **Date Analyzed:** 04/17/18 01:44

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod

Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	113	99.8	113	70-135	
o-Terphenyl	54.7	49.9	110	70-135	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: MC Federal #3

Work Order #: 582192 **Project ID:** 212C-MD-00958 Task #13

Analyst: ARM **Date Prepared:** 04/14/2018 **Date Analyzed:** 04/14/2018

Lab Batch ID: 3046716 **Sample:** 7642660-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	950	95	1000	980	98	3	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	951	95	1000	993	99	4	70-135	20	

Analyst: ARM **Date Prepared:** 04/16/2018 **Date Analyzed:** 04/16/2018

Lab Batch ID: 3046890 **Sample:** 7642747-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1020	102	1000	1080	108	6	70-135	20	
Diesel Range Organics (DRO)	<15.0	1000	1040	104	1000	1100	110	6	70-135	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: MC Federal #3

Work Order # : 582192 **Project ID:** 212C-MD-00958 Task #13

Lab Batch ID: 3046716 **QC- Sample ID:** 582192-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 04/14/2018 **Date Prepared:** 04/14/2018 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	950	95	998	958	96	1	70-135	20	
Diesel Range Organics (DRO)	<15.0	998	977	98	998	993	99	2	70-135	20	

Lab Batch ID: 3046890 **QC- Sample ID:** 582461-001 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 04/17/2018 **Date Prepared:** 04/16/2018 **Analyst:** ARM

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	1020	102	998	1020	102	0	70-135	20	
Diesel Range Organics (DRO)	<15.0	997	1050	105	998	1050	105	0	70-135	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

582192

Client Name: COG	**Site Manager:** Ike Tavarez
Project Name: MC Federal #3	
Project Location: (county, state) Lea County, New Mexico	**Project #:** 212C-MD-00958 Task#13
Invoice to: Becky Haskell	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:** Mike Carmona

Comments: Run deeper samples if TPH exceeds 1,000 mg/kg.

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING YEAR: 2017 DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	MATRIX	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	PRESERVATIVE METHOD None	PRESERVATIVE METHOD	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance					Hold
	AH #1 (0-1')	4/12/2018			X				X			1	N			X																				
	AH #1 (1-1.5')	4/12/2018			X				X			1	N			X																				
	AH #1 (2-2.5')	4/12/2018			X				X			1	N			X																				
	AH #1 (3-3.5')	4/12/2018			X				X			1	N																							
	AH #1 4-4.5')	4/12/2018			X				X			1	N																							
	AH #1 (5-5.5')	4/12/2018			X				X			1	N																							
	AH #2 (0-1')	4/12/2018			X				X			1	N			X																				
	AH #2 (1-1.5')	4/12/2018			X				X			1	N			X																				
	AH #2 (2-2.5')	4/12/2018			X				X			1	N			X																				
	AH #2 (3-3.5')	4/12/2018			X				X			1	N																							

Relinquished by: mike Carmona	Date: 4-12-18	Time:	Received by:	Date: 4/12/18	Time: 1530
Relinquished by:	Date: 4-12-18	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

LAB USE ONLY
Sample Temperature

(Circle) HAND DELIVERE

REMARKS:
- ☐ STANDARD
- ☒ RUSH: Same Day 24 hr 48 hr (72 hr)
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

Temp: 5.4 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 5.4

ORIGINAL COPY

Final 1.000

Analysis Request of Chain of Custody Record

Tetra Tech. Inc.

4000 N. Big Spring Street, Ste
401 Midland,Texas 79705
Tel (432) 682-4559
Fax (432) 682-3946

582192

Client Name: COG	**Site Manager:** Ike Tavarez
Project Name: MC Federal #3	
Project Location: (county, state) Lea County, New Mexico	**Project #:** 212C-MD-00958 Task#13
Invoice to: Becky Haskell	
Receiving Laboratory: Xenco Midland Tx	**Sampler Signature:** Mike Carmona
Comments: Run deeper samples if TPH exceeds 1,000 mg/kg.	

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX: WATER	MATRIX: SOIL	MATRIX:	PRESERVATIVE METHOD: HCL	PRESERVATIVE METHOD: HNO_3	PRESERVATIVE METHOD: ICE	PRESERVATIVE METHOD: None	PRESERVATIVE METHOD:	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance					Hold
	AH #2 (4-4.5')	4/12/2018			X				X			1	N																							
	AH #2 (5-5.5')	4/12/2018			X				X			1	N																							
	AH #3 (0-1')	4/12/2018			X				X			1	N			X																				
	AH #3 (1-1.5')	4/12/2018			X				X			1	N			X																				
	AH #3 (2-2.5')	4/12/2018			X				X			1	N			X																				
	AH #3 (3-3.5')	4/12/2018			X				X			1	N																							
	AH #3 (4-4.5')	4/12/2018			X				X			1	N																							
	AH #3 (5-5.5')	4/12/2018			X				X			1	N																							

ANALYSIS REQUEST
(Circle or Specify Method No.)

Final 1.000

Page 15 of 15

Relinquished by: mike Carmona	Date: 4-12-18	Time:
Relinquished by:	Date: 4-12-18	Time:
Relinquished by:	Date:	Time:
Received by:	Date: 4/12/18	Time: 1530
Received by:	Date:	Time:
Received by:	Date:	Time:

LAB USE ONLY

Sample Temperature

REMARKS:

- ☐ STANDARD
- ☒ RUSH: Same Day 24 hr 48 hr 72 hr
- ☐ Rush Charges Authorized
- ☐ Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY

Temp: 5.6 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 5.4

Table 1
COG Operating LLC.
MC Federal #3
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	C6-C10	C10-C28	C28-C35	Total						
AH-1	3/6/2018	0-1	X	-	1,060	3,610	498	**5,170**	<0.0998	0.116	1.25	5.02	6.39	-
	"	1-1.5	X	-	37.0	221	29.9	288	<0.00200	<0.00200	<0.00200	0.0404	0.0404	-
	4/12/2018	0-1	X	-	226	2,590	127	**2,940**	-	-	-	-	-	-
	"	1-1.5	X	-	<15.0	18.8	<15.0	18.8	-	-	-	-	-	-
	"	2-2.5	X	-	<15.0	<15.0	<15.0	<15.0	-	-	-	-	-	-
	8/2/2018	0-1	X	-	-	-	-	-	-	-	-	-	-	**1,900**
	"	1-1.5	X	-	-	-	-	-	-	-	-	-	-	**1,760**
	"	2-2.5	X	-	-	-	-	-	-	-	-	-	-	314
	"	3-3.5	X	-	-	-	-	-	-	-	-	-	-	268
	"	4-4.5	X	-	-	-	-	-	-	-	-	-	-	110
AH-2	3/6/2018	0-1	X	-	51.3	2,330	537	**2,920**	<0.00202	<0.00202	0.00504	0.0212	0.0263	-
	"	1-1.5	X	-	26.0	1,670	391	**2,090**	<0.00199	<0.00199	0.00410	0.00443	0.00853	-
	4/12/2018	0-1	X	-	**471.0**	**6,020**	**225**	**6,720**	-	-	-	-	-	-
	"	1-1.5	X	-	27.7	213	<14.9	241	-	-	-	-	-	-
	"	2-2.5	X	-	<15.0	55.7	<15.0	55.7	-	-	-	-	-	-
	8/2/2018	0-1	X	-	-	-	-	-	-	-	-	-	-	<4.99
	"	1-1.5	X	-	-	-	-	-	-	-	-	-	-	5.73
	"	2-2.5	X	-	-	-	-	-	-	-	-	-	-	<5.00
	"	3-3.5	X	-	-	-	-	-	-	-	-	-	-	<5.00
	"	4-4.5	X	-	-	-	-	-	-	-	-	-	-	<5.02
AH-3	3/6/2018	0-1	X	-	**183**	**4,570**	**827**	**5,580**	<0.00198	<0.00198	0.00561	0.0104	0.0160	-
	"	1-1.5	X	-	247	3,340	489	**4,080**	<0.00200	<0.00200	0.0236	0.0300	0.0536	-
	4/12/2018	0-1	X	-	<15.0	2,020	131	**4,550**	-	-	-	-	-	-
	"	1-1.5	X	-	**237**	**3,490**	**137**	**7,980**	-	-	-	-	-	-
	"	2-2.5	X	-	<15.0	531	49.2	**1,220**	-	-	-	-	-	-
	"	3-3.5	X	-	<15.0	<15.0	<15.0	<15.0	-	-	-	-	-	-
	8/2/2018	0-1	X	-	-	-	-	-	-	-	-	-	-	65.1
	"	1-1.5	X	-	-	-	-	-	-	-	-	-	-	42.4
	"	2-2.5	X	-	-	-	-	-	-	-	-	-	-	11.2
	"	3-3.5	X	-	-	-	-	-	-	-	-	-	-	10.8
	"	4-4.5	X	-	-	-	-	-	-	-	-	-	-	10.3

Proposed Excavation Depths